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EXAMINER

AL BESHRAWI, TONY

ART UNIT

PAPER NUMBER

2631

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/390,966

Applicant(s)

LUI ET AL.

Examiner

Tony Al-Beshrawi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 07 September 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1 - 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 20 is/are rejected.
- 7) ☒ Claim(s) 4, 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

The specification is objected to as follow: Page 1 lines 13 – 17 should be deleted.

Page 16; insert (-) minus sign in  $\alpha_n$  equation for n: odd

Appropriate correction is required.

### ***Claim Objections***

Claims 4, and 18 are objected to because of the following informalities:

Claim 4, line 1; delete “ the modulation step”

Claim 18, line 1; delete “wherein 10”.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5 – 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claims 5 line 19; recite the limitation "the continuous phase modulated signal"  
claim 11 line 14; recite the limitation "the continuous phase modulated signal" .  
There is insufficient antecedent basis for this limitation in the claim.

Claims 4, is rejected under 35 U.S.C. 112, second paragraph, as being  
indefinite for failing to particularly point out and distinctly claim the subject matter  
which applicant regards as the invention.

Claim 4, line 2 " fraction " is not specified, renders the claim indefinite.

Claim 4, M is not defined, renders the claim indefinite.

Claims 6, 7, 12, 15 are rejected under 35 U.S.C. 112, second paragraph,  
as being indefinite for failing to particularly point out and distinctly claim the  
subject matter which applicant regards as the invention.

Claims 6, 7, 12, and 15; "n" is not defined.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 , 2, 11, 19, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Ho et al (5,712,877).

Regarding claim 1; Ho et al disclose “PILOT-SYMBOL AIDED CONTINUOUS PHASE MODULATION SYSTEM” method for communicating a data stream, the method comprising the steps of, generating a sequence of data symbols from the data stream  $\{b_k\}$ , precoding the sequence of data symbols into a sequence of precoded data symbols(10 in Fig.1), modulating the sequence of precoded data symbols into a continuous phase modulated signal (12 in Fig. 1), transmitting the continuous phase modulated signal ( $s(t)$  in Fig1), receiving the continuous phase modulated signal, demodulating the continuous phase modulated signal into a received base band signal, and filtering the received baseband signal into a

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sequence of filtered signals having absolute phase for indicating the sequence of data symbols( 14, 15, 16, 18, and 20 in Fig. 1) ( see abstact, column 2 line 38 – column 6 line 18, Figs 1, 2) .

Regarding claim 2; Ho et al further discloses the steps of , sampling the sequence of filtered signals into a sequence of sampled signals, and decoding the sequence of sampled signals into an estimated data stream( 15, 16, 18, and 20) ( see abstract, column 2 line 38 – column 6 line 18, Figs 1, 2) .

Claims 1, 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Blaker et al (5,724,390).

Regarding claim 1; Blaker et al disclose "PILOT-SYMBOL AIDED CONTINUOUS PHASE MODULATION SYSTEM" method to the claimed invention for communicating a data stream, the method comprising the steps of, generating a sequence of data symbols from the data stream, precoding the sequence of data symbols into a sequence of precoded data symbols, modulating the sequence of precoded data symbols into a continuous phase modulated signal, transmitting the continuous phase modulated signal, receiving the continuous phase

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modulated signal, demodulating the continuous phase modulated signal into a received base band signal, and filtering the received baseband signal into a sequence of filtered signals having absolute phase for indicating the sequence of data symbols ( see abstract, column 2 line 24 – column 4 line 30, Fig 1, ) .

Regarding claim 2; Blaker et al further discloses the steps of , sampling the sequence of filtered signals into a sequence of sampled signals, and decoding the sequence of sampled signals into an estimated data stream ( see abstract, column 2 line 24 – column 4 line 30, Fig 1, ) .

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, 5, 8, 9, 10, 11, 16, ~~17~~, 19, and 20 are rejected under 35 U.S.C.

*T.B.*

103(a) as being unpatentable over Ho et al in View of the prior art of the instant application.

Regarding claims 3, and 10; Regarding claim 1; Ho et al disclose "PILOT-SYMBOL AIDED CONTINUOUS PHASE MODULATION SYSTEM" method for communicating a data stream, the method comprising the steps of, generating a

sequence of data symbols from the data stream  $\{b_k\}$ , precoding the sequence of data symbols into a sequence of precoded data symbols(10 in Fig.1), modulating the sequence of precoded data symbols into a continuous phase modulated signal (12 in Fig. 1), transmitting the continuous phase modulated signal ( $s(t)$  in Fig1), receiving the continuous phase modulated signal, demodulating the continuous phase modulated signal into a received base band signal, and filtering the received baseband signal into a sequence of filtered signals having absolute phase for indicating the sequence of data symbols( 14, 15, 16, 18, and 20 in Fig. 1) ( see abstract, column 2 line 38 – column 6 line 18, Figs 1, 2). the generating step comprises the steps of receiving the data stream of data bits, formatting the data stream into the sequence of formatted data pulses as a sequence data symbols within an M-ary of set, the modulating step comprises the steps of Gaussian filtering and frequency modulating for generating the continuous phase modulated signal, the Gaussian filter step filters the precoded sequence of data symbols into pulse responses continuously accumulated over a finite memory time as a filter response, the Gaussian filtering step is defined by a bandwidth time product inversely defining the finite memory time, the frequency modulating step frequency modulates a carrier reference by the filter response by a modulation index for converting the filter response into the continuous phase modulated signal, the demodulating step is carrier demodulating step for demodulating the continuous phase modulated signal using a local carrier into the baseband signal, the carrier demodulating step further removes a carrier



phase offset between the local carrier and the received continuous phase modulated signal. However, Ho et al fail to disclose the filtering step is a matched filtering step for matched filtering of the received baseband signal into the filtered signal, the matched filtering is matched by pulse amplitude modulation representation to the Gaussian filtering step, the filtered signal has an absolute phase at a periodic sampling time for indicating the sequence of data symbols, The prior art of the instant application discloses that the filtering step is a Laurent matched filters ( see page 3 line 24 – page 4 line 14),. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of the prior art of the instant application into the teaching of Ho et al to filter the demodulated received signal into a symbol sequence, and to match the amplitude modulated pulses in the PAM representation. ( see abstract, column 2 line 38 – column 6 line 18, Figs 1, 2) .

Regarding claim 4; it is inherent the modulation index is equal to a fraction selected from a group consisting of  $1/M$  and  $1-1/M$  for the M-ary symbol set ( see abstract, column 2 line 38 – column 6 line 18, Figs 1, 2) ..

Regarding claim 5, and 11; see claim 3.

Regarding claim 8; <sup>19</sup> Ho et al further disclose the modulation index is  $1/2$  ( see abstract, column 2 line 38 – column 6 line 18, Figs 1, 2) .

Regarding claims 9, and 20; Ho et al further disclose the bandwidth time product is  $1/3$  ( see abstract, column 2 line 38 – column 6 line 18, Figs 1, 2) .

Regarding claim 20; Ho et al furtherdisclose the modulation index is  $3/4$  ( see abstract, column 2 line 38 – column 6 line 18, Figs 1, 2) .

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Krieger et al ( 5,841,817), Alard et al (6,263,029), Borth et al ( 5,142,551), dent (6,320,914), Muller et al (5,379,324), Blaker et al (5,724,390), Ho et al (5,712,877), Gee L. Lui "Threshold detection Performance of GMSK Signal With  $BT=0.5$ " , IEEE 1998, pp 515 – 519 were cited because they are pertinent to Gaussian Minimum Shift Keying (GMSK) precoding method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **(Tony Al-Beshrawi)** whose telephone number is **(703-308-9557)**

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **(Chi Pham)**, can be reached at **(703-305-4378)**.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

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Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

T.B.

October 17, 2002

*T.B.*

  
CHI PHAM  
SUPERVISORY PATENT EXAMINER  
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*10/21/02*